

**A Listing of Claims**

1. (Cancelled).
2. (Currently Amended) A computer system architecture ~~An apparatus~~ for filling forms, comprising:
  - a form fill engine for analyzing a context of a plurality of users' navigation, and completing a form upon users' consent or user initiated actions, wherein said form fill engine pulls user data and rules to map said data to a requested form, wherein said form includes a plurality of fields having field names, wherein user data is entered into said fields in the form of field values; and
  - a reverse mapping engine for implementing a reverse mapping algorithm, wherein after said form fill engine recognizes a match, extracted knowledge from said match is communicated to a reverse mapping server for storage into a reverse mapping database, wherein said reverse mapping engine further comprises:
    - a means for logging field name submissions and field value submissions for each individual user among said plurality of users in a central subscription service database in the form of previously-entered field values and previously-recorded field names;
    - a means for collecting at least one newly-recorded field name and corresponding newly-entered field value submission for at least one new form that a user from among said plurality of users enters;

a means for comparing newly-entered field values for an individual user with previously-entered field value submissions by the same individual user in said central subscription service database;

a means for determining if a match between said newly-entered field value by said individual user and said previously-entered field value submission of said individual user is found, and if so, considering this as a hit and marking a name of a hit field according to a type of said user's data that matches;

a means for repeating the above steps until a threshold confidence level about a real meaning of said fields is reached; and

a means for migrating said form to collection of mapped fields;

wherein ~~a resulting profile~~ said collection of mapped fields is used to help all subsequent users to fill the same form.

3. (Currently Amended) The computer system architecture apparatus of Claim 2, further comprising:

a site profile server for providing information about a mapping of a site currently visited by said user from a site profile database and for connecting to a user data server to get a user's profile from a user database.

4. (Currently Amended) The computer system architecture apparatus of Claim 3, further comprising:

a consensus engine for monitoring statistics of reverse mappings, wherein after passing a predetermined statistical level of consensus said consensus engine decides whether said threshold confidence level has been reached a mapping is accurate, and triggers migration of a mapping from said reverse mapping database to said collection of mapped fields site profile database.

5. (Currently Amended) A method for reverse auto-profiling in a form fill application, comprising the steps of:

connecting a plurality of users with a server-based reverse-mapping engine in a distributed computing environment;

providing a browser-based user interface for submission of forms, wherein said forms include user data entered into a plurality of fields having field names, wherein the user data is entered in the form of field values;

logging field name submissions and field value submissions for each individual user among said plurality of users in a central subscription service database in the form of previously-entered field values and previously-recorded field names;

for every form a user submits, collecting at least one newly-recorded field name names and corresponding newly-entered field value submission values for at least one new form that a user from among said plurality of users enters has entered;

comparing newly-entered field values for an individual user with previously-entered field value submissions by the same individual user a same user's data

found in [[a]] said central subscription service database by said reverse-mapping engine;

determining if a match between said newly-entered field value by said individual user submitted data and said previously-entered field value submission of said individual user user's profile is found by said reverse-mapping engine, considering this as a hit and, after that, marking a name of a hit field according to a type of said user's data that matches;

repeating the above steps until a threshold statistically reliable confidence level about a real meaning of said fields is reached; and

thereafter, migrating said form to a collection of mapped fields mapped status; wherein all subsequent users using said same form thereafter receive auto-fill assistance based on matches in said collection of mapped fields receive service based on a profile built by learning from an initial set of users.

6. (Currently Amended) The method of Claim 5 A method for reverse auto-correcting in a form fill application, further comprising the steps of:

for every form automatically filled, observing whether a user introduces corrections after a form fill operation is completed for a particular site;

trying to match corrections with knowledge about user specific data;;

if a matched correction is found, considering it a correction-hit;

re-mapping a field that was corrected; and

after a statistically significant number of corrections are introduced, migrating corrections to a profile of said site.

7. (Withdrawn) A caching method for a form fill application, comprising the steps of:

a client maintaining a cache of form fill mapping data that it receives from a site profile server;

said client maintaining an index of all domains for which said site profile server has form fill mapping data, wherein said index is identified by a version number and contains a record for each domain supported;

said client periodically polling said site profile server to identify differences between an index version at said client and a most recent index;

said client using said differences to update said client's local index; and

removing form fill mapping data for a domain stored in said cache, if it was present, when said differences indicate that a mapping for said domain has changed.

8. (Withdrawn) The method of Claim 7, further comprising the steps of:

while said client is used for browsing, said client checking to see if it has mapping data for each domain it visits;

if said client navigates to a domain for which it has form fill mapping data, said client operating under an assumption that form fill mapping data that it has for said domain is the most current available, and said client proceeding to use said form fill mapping data to recognize checkout forms and offer to fill them; and

if said client navigates to a domain for which it does not have form fill mapping data, said requesting form fill mapping data for said domain from said site

profile server, and said client storing said form fill mapping data in said cache when said data are received.

9. (Withdrawn) A method for downloading a user's profile in a reverse mapping form fill application without challenging said user with a higher level of authentication, comprising the steps of:

encrypting said user profile with a user specific symmetric key, stored in a user database; and

storing said encrypted profile on said user's system after a first time said user authenticates with a higher-level authentication from said system.

10. (Withdrawn) A method for downloading a user's profile in a reverse mapping form fill application without challenging said user with a higher level of authentication, comprising the step of:

using less than every character from said user profile when downloading said user profile;

wherein only a subset of said user profile is potentially revealed, while sufficient confidence is obtained in said user profile to generate a reverse mapping.

11. (Withdrawn) A method for maintaining privacy with regard to a user's profile in a reverse mapping form fill application, comprising the steps of:

generating a large, random number token at a server, said server signing said token with a certificate, and storing said token persistently on said user's system a first time said user authenticates with a second level password;

flagging said user to prevent issuing of multiple tokens for a same user;

wherein the random number used in said token assures that real user identities are not traceable; and

wherein communications are identifiable for unique users without knowing an actual identity of said users themselves.

12. (Withdrawn) The method of Claim 11, wherein said token and signature are included in all communications between said user and a reverse mapping server.

13. (Cancelled).

14. (Cancelled).

15. (Currently Amended) A method for filling forms, comprising the steps of:

analyzing a context of a users' navigation, and completing a form upon users' consent or user initiated actions, wherein a form fill engine pulls user data and rules to map said data to a requested form; and

implementing a reverse mapping algorithm, wherein after said form fill engine recognizes a match, extracted knowledge from said match is

communicated to a reverse mapping server for storage into a reverse mapping database, wherein said reverse mapping algoirthm further comprises:

logging field name submissions and field value submissions for each individual user among said plurality of users in a central subscription service database in the form of previously-entered field values and previously-recorded field names;

collecting at least one newly-recorded field name and corresponding newly-entered field value submission for at least one new form that a user from among said plurality of users enters;

comparing newly-entered field values for an individual user with previously-entered field value submissions by the same individual user in said central subscription service database;

determining if a match between said newly-entered field value by said individual user and said previously-entered field value submission of said individual user is found, and if so, considering this as a hit and marking a name of a hit field according to a type of said user's data that matches;

repeating the above steps until a threshold confidence level about a real meaning of said fields is reached; and

migrating said form to collection of mapped fields;  
wherein a resulting profile said collection of mapped fields is used to help all subsequent users to fill the same form.

16. (Original) The method of Claim 15, further comprising the step of:

providing information about a mapping of a site currently visited by said user from a site profile database and for connecting to a user data server to get a user's profile from a user database.

17. (Currently Amended) The method of Claim 15, further comprising the step of:

monitoring statistics of reverse mappings, wherein after passing a predetermined statistical level of consensus said consensus engine decides whether said threshold confidence level has been reached ~~a mapping is accurate~~, and triggers migration of a mapping from said reverse mapping database to said collection of mapped fields site profile database.

18. (Currently Amended) An apparatus for reverse auto-profiling in a form fill application, comprising:

a module connecting a plurality of users with a server-based reverse-mapping engine in a distributed computing environment;

a module for providing a browser-based user interface for submission of forms, wherein said forms include user data entered into a plurality of fields having field names, wherein the user data is entered in the form of field values;

a module for logging field name submissions and field value submissions for each individual user among said plurality of users in a central subscription service database in the form of previously-entered field values and previously-recorded field names;

a module for collecting at least one newly-recorded field name names and corresponding newly-entered field name submission values for at least one new form that a said user from among said plurality of users has entered for every form a user submits;

a module for comparing newly-entered field values for an individual user with previously-entered field value submissions by the same individual user a same user's data found in [[a]] said central subscription service database by said reverse-mapping engine;

a module for determining if a match between said newly-entered field value by said individual user and said previously-entered field value submission of said individual user is found by said reverse-mapping engine, and considering this as a hit and marking a name of a hit field according to a type of said user's data that matches, if a match between submitted data and said user's profile is found;

a module for generating a threshold statistically reliable confidence level about a real meaning of said fields is reached; and

a module for migrating said form to a collection of mapped fields mapped status;

wherein all subsequent users using said same form thereafter receive auto-fill assistance based on matches in said collection of mapped fields receive service based on a profile built by learning from an initial set of users.

19. (Currently Amended) The apparatus of Claim 18, further ~~An apparatus for reverse auto correcting in a form fill application,~~ comprising:

a module for observing whether a user introduces corrections after a form fill operation is completed for a particular site for every form automatically filled;

a module for trying to match corrections with knowledge about user specific data, wherein if a matched correction is found, said module considering it a correction-hit;

a module for re-mapping a field that was corrected; and

a module for migrating corrections to a profile of said site after a statistically significant number of corrections are introduced.

20. (Withdrawn) A caching apparatus for a form fill application, comprising:

a client-based cache of form fill mapping data that said client receives from a site profile server;

an index maintained at said client of all domains for which said site profile server has form fill mapping data, wherein said index is identified by a version number and contains a record for each domain supported;

a mechanism at said client for periodically polling said site profile server to identify differences between an index version at said client and a most recent index;

a module at said client for using said differences to update said client's local index; and

a module for removing form fill mapping data for a domain stored in said cache, if it was present, when said differences indicate that a mapping for said domain has changed.

21. (Withdrawn) The apparatus of Claim 20, further comprising:

a module associated with said client for checking to see if it has mapping data for each domain it visits, while said client is used for browsing;

wherein if said client navigates to a domain for which it has form fill mapping data, said client operating under an assumption that form fill mapping data that it has for said domain is the most current available, and said client proceeding to use said form fill mapping data to recognize checkout forms and offer to fill them; and

wherein if said client navigates to a domain for which it does not have form fill mapping data, said requesting form fill mapping data for said domain from said site profile server, and said client storing said form fill mapping data in said cache when said data are received.

22. (Withdrawn) An apparatus for downloading a user's profile in a reverse mapping form fill application without challenging said user with a higher level of authentication, comprising:

a module for encrypting said user profile with a user specific symmetric key, stored in a user database; and

a memory storing said encrypted profile on said user's system after a first time said user authenticates with a higher-level authentication from said system.

23. (Withdrawn) An apparatus for downloading a user's profile in a reverse mapping form fill application without challenging said user with a higher level of authentication, comprising:

a module for using less than every character from said user profile when downloading said user profile;

wherein only a subset of said user profile is potentially revealed, while sufficient confidence is obtained in said user profile to generate a reverse mapping.

24. (Withdrawn) An apparatus for maintaining privacy with regard to a user's profile in a reverse mapping form fill application, comprising:

a pseudo-random number generator for generating a large, random number token at a server;

a module associated with said server for signing said token with a certificate;

a memory for storing said token persistently on said user's system a first time said user authenticates with a second level password;

a module for flagging said user to prevent issuing of multiple tokens for a same user;

wherein the random number used in said token assures that real user identities are not traceable; and

wherein communications are identifiable for unique users without knowing an actual identity of said users themselves.

25. (Withdrawn) The apparatus of Claim 24, wherein said token and signature are included in all communications between said user and a reverse mapping server.

26. (Cancelled).